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Extract from the report of the Committee on Energy and Natural Resources for Development on its second session*

* The present document is a mimeographed version of chapter I of the report of the Committee on Energy and Natural Resources for Development on its second session, held in New York from 14 to 25 August 2000, which contains the matters calling for action by the Council or brought to its attention. The complete report will be issued as *Official Records of the Economic and Social Council, 2000, Supplement No. 12* (E/2000/32).

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Chapter I

Matters calling for action by the Economic and Social Council or brought to its attention

A. Draft resolution for adoption by the Council

1. The Committee on Energy and Natural Resources for Development recommends to the Economic and Social Council the adoption of the following draft resolution:

Case studies from Governments and international institutions on matters relating to integration of water and land management in the context of Agenda 21 for sustainable development

The Economic and Social Council,

Taking note of the report of the Committee on its second session,

Recognizing the importance of highlighting the good examples of implementation of the recommendations of Agenda 21,[1]

Aware that progress has been achieved at various national and subnational levels towards implementation of the activities of Agenda 21, and aware also that some success has been achieved on various issues of integration of land and water management for sustainable development,

Recognizing that challenges have to be overcome in securing food supply, providing safe drinking water supply, protecting the ecosystem, meeting the basic needs of health and sanitation, managing water-related disasters, sharing water resources and ensuring effective stakeholder participation in water management,

Invites Governments and international organizations to make available, as background material in the preparatory process of the ten-year review of the implementation of the outcome of the United Nations Conference on Environment and Development, case studies carried out by them and recommends that the topics on which case studies may be conducted should include, inter alia, river basin cooperation; the protection of catchment areas for the management of drinking water sources; community involvement in land and water resources management for agriculture; water supply in both rain-fed and irrigated areas; integrated land and water resources management; and impacts of management of water resources, both quality and quantity, on the economy of a country or region.

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[1] *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992*, vol. I, *Resolutions Adopted by the Conference* (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex II.

B. Draft decision for adoption by the Council

2. The Committee on Energy and Natural Resources for Development recommends to the Economic and Social Council the adoption of the following draft decision:

Report of the Committee on Energy and Natural Resources for Development on its second session and provisional agenda for the third session of the Committee

The Economic and Social Council:

(a) Takes note of the report of the Committee on Energy and Natural Resources for Development on its second session;

(b) Decides to transmit the report of the Committee to the Commission on Sustainable Development;

(c) Approves the provisional agenda and documentation for the third session of the Committee set out below:

Provisional agenda and documentation for the third session of the Committee on Energy and Natural Resources for Development

1. Election of officers.

2. Adoption of the agenda and organization of work.

3. Follow-up to the second session of the Committee.

Documentation

Report of the Secretary-General on follow-up to the second session of the Committee

4. Follow-up to the outcome of the ninth session of the Commission on Sustainable Development and contribution to the preparatory process of the 2002 ten-year review of the implementation of the outcome of the United Nations Conference on Environment and Development.

Documentation

A background document to be prepared by the Sub-group on Energy of the Committee

5. Examination of the social, economic and environmental impact of mineral extraction and metal production on integrated land and water management.

Documentation

Inter-sessional paper to be provided to the Secretariat by Committee experts

6. Formulation of strategies for the rehabilitation of land and water degradation by mining operations.

Documentation

Inter-sessional paper to be provided to the Secretariat by Committee experts

7. Towards the sustainable exploitation of groundwater.

Documentation

Inter-sessional paper to be provided to the Secretariat by Committee experts

8. Mechanisms for fostering hydro-solidarity.

9. Key issues related to wetlands and sustainable development.

Documentation

Inter-sessional paper to be provided to the Secretariat by Committee experts

10. Desalinization, hydropower and multi-purpose water development projects.

Documentation

A background paper to be prepared jointly by the Committee in association with the Secretariat

11. Review of salient trends and issues on energy development and use in the context of sustainable development:

    (a) Advanced technologies for the modern use of biomass;

Documentation

Report of the Secretary-General on advanced technologies for the modern use of biomass to be prepared by the Secretariat in association with the Sub-group on Energy of the Committee

    (b) Update on rural energy;

Documentation

Report of the Secretary-General on the update on rural energy development to be prepared by the Secretariat in association with the Sub-group on Energy of the Committee

    (c) Review of financial mechanisms: potential benefits of the establishment of financial intermediary organizations, as well as evaluation of the effectiveness of international financial mechanisms.

Documentation

A background document to be prepared jointly by the Committee in association with the Secretariat

12. Strengthening and coordination of energy activities within the United Nations system.

Documentation

Report of the Secretary-General on the strengthening and coordination of energy activities within the United Nations system to be prepared by the Secretariat in association with the Sub-group on Energy of the Committee

13. Provisional agenda for the fourth session of the Committee.

14. Adoption of the report of the Committee on its third session.

C. Decisions of the Committee brought to the attention of the Council

3. The following decisions, adopted by the Committee, are brought to the attention of the Council.

Decision 2/1
The need to establish linkages between policy makers and professionals working on food security, water security and environmental security

The Committee on Energy and Natural Resources for Development, taking note of the report of the Expert Group Meeting on Strategic Approaches to Freshwater Management held in Harare in January 1998,[2] noting that the issues of water, agriculture and integrated land management were discussed as separate topics at the sixth and eighth sessions of the Commission on Sustainable Development, and aware that policy makers and professionals working on issues of food security, water security, and environmental security need to contribute more directly to policy and management decisions across sectors, decides to invite the Department of Economic and Social Affairs of the United Nations Secretariat to explore the possibility of bringing together professionals, policy makers and resource managers in an expert meeting, as preparation for or follow-up to the ten-year review of the implementation of the outcome of the United Nations Conference on Environment and Development, to contribute to the process of clarifying the interdependencies among food security, water security and environmental security.

Decision 2/2
Water supply and sanitation subsector

The Committee on Energy and Natural Resources for Development, taking note with appreciation of the report of the Secretary-General on the progress made in providing safe water supply and sanitation for all during the 1990s,[3] recalling the recommendations made by the Committee at its first session, and noting with satisfaction that most of its comments and suggestions have been incorporated into the aforementioned report of the Secretary-General:

(a) Draws the attention of the Economic and Social Council to the fact that, while significant progress has been made in urban water supply (93.6 per cent

[2] E/CN.17/1998/2/Add.1.
[3] E/CN.17/2000/13.

coverage globally) and urban sanitation (85.3 per cent coverage globally), the progress in rural water supply (70.7 per cent coverage globally) and rural sanitation (36.5 per cent coverage globally) remains a subject of major concern, and that, further, the situation in Asia, Africa and Latin America (rural sanitation coverage being 29.6 per cent, 43.0 per cent and 43.5 per cent, respectively) remains below expected levels;

(b) Also draws the attention of the Economic and Social Council to issues related to water quality (for example, the incidence of arsenic, flouride and so forth in the rural water supply in some parts of the world) as a major subject of concern;

(c) Supports the following strategies:

(i) Integration of water supply with sanitation and hygiene education;

(ii) A gender dimension of water supply and sanitation including women as guardians of large groups of users;

(iii) Improved information management;

(iv) Integration of water supply and sanitation within the holistic approach to water resources development, management and utilization;

(d) Calls for protection of sources of water and watersheds for ensuring water quality.

Decision 2/3
Strengthening and coordination of the activities of the United Nations system in the field of water resources

The Committee on Energy and Natural Resources for Development, having reviewed the report of the Secretary-General on technical cooperation activities of the United Nations system in the field of water resources,[4] considering the recommendations contained in the report of the Secretary-General on the activities of the organizations of the United Nations system in the field of freshwater resources,[5] which was before the Committee at its first session in 1999, another pertinent document on the subject, taking note of the note by the Secretary-General on the review of the Administrative Committee on Coordination Subcommittee on Water Resources,[6] which contains the outcome of the special session of the Subcommittee on Water Resources held in the Netherlands on 23 March 2000, and aware that the Subcommittee on Water Resources has been entrusted with the task of preparing the forthcoming biennial United Nations *World Water Development Report*, recommends that, in order to strengthen the activities of the United Nations system within the field of water resources, the Administrative Committee on Coordination Subcommittee on Water Resources aim towards better inter-agency coordination at the country and regional levels for the rationalization of project implementation.

[4] E/C.14/2000/10.
[5] E/CN.17/1998/3.
[6] E/CN.17/2000/18.

Decision 2/4
United Nations agency technical reports

The Committee on Energy and Natural Resources for Development, concerned that the high-quality professional and technical reports produced by United Nations agencies are not readily accessible to end-users, especially at the country level, recommends that the Administrative Committee on Coordination Subcommittee on Water Resources explore ways and means of making the technical reports/documents prepared by United Nations agencies readily available through easily retrievable electronic forms.

Decision 2/5
Priorities for action and assessment in water and related areas of Agenda 21 for the ten-year review of the implementation of the outcome of the United Nations Conference on Environment and Development

The Committee on Energy and Natural Resources for Development, recalling Economic and Social Council resolution 1998/46 of 31 July 1998, annex I, section D, in which the Committee was directed, in formulating its programme of work, to take into full account the multi-year programme of work of the Commission on Sustainable Development, so as to ensure that its own work would be structured to contribute to the work of the Commission, and bearing in mind that the Department of Economic and Social Affairs of the United Nations Secretariat is the task manager of chapter 18 of Agenda 21,[7] entitled "Protection of the quality and supply of freshwater resources: application of integrated approaches to the development, management and use of water resources":

(a) Requests the Department of Economic and Social Affairs of the United Nations Secretariat to utilize the text annexed to the present decision for the preparation of its assessments of implementation of Agenda 21 and other inputs for the process of the ten-year review of the implementation of the outcome of the United Nations Conference on Environment and Development;

(b) Also requests the Department of Economic and Social Affairs of the United Nations Secretariat to submit the text annexed to the present decision as an information document to the tenth session of the Commission on Sustainable Development and the event on the ten-year review of the implementation of the outcome of the United Nations Conference on Environment and Development.

[7] *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992*, vol. I, *Resolutions Adopted by the Conference* (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex II).

Annex

Priorities for action and assessment in water and related areas of Agenda 21 for the ten-year review of the implementation of the outcome of the United Nations Conference on Environment and Development

1. Water is integral to sustainable development and, as such, has social, environmental and economic values that are inextricably linked and mutually dependent. Water resources, even when considered in an integrated fashion, cannot be considered separately from food and environmental security. Integration must go beyond water management to integrating land and water use, management and planning for development. Ten years after Rio, Governments, intergovernmental organizations, donors and financial institutions continue to make many decisions on a sectoral basis.

2. In order to overcome such a tendency, we recommend that, in the assessment of the implementation of Agenda 21[6] and in the priorities for future implementation in pursuit of sustainable development, the United Nations, Governments and civil society consider the following.

3. Sustainable development of water resources requires a means to integrate water concerns into development in respect of land use and food security, environmental protection, health, and urban and industrial planning.

4. Policies, legislation, regulations or incentives may be used to promote this integrated approach to land and water management and planning; they may also be used to protect the environment, encourage governmental coordination and the participation of civil society, and determine priorities for assessment and monitoring and capacity-building.

5. For example, policies, using one or more instruments, should be considered to:

(a) Ensure public participation in decision-making and management as appropriate;

(b) Define water quality standards, limit pollution loads and ensure environmental protection;

(c) Establish institutional arrangements for sectoral collaboration in water allocations decisions, and incorporate consideration of the impacts on water of all land use and development decisions;

(d) Encourage water use efficiency and reduce non-point source pollution from agriculture and industry.

I. Environmental protection and concerns

6. Environmental protection and concerns must be among the highest priorities, in regard to water resources. This priority stems from two essential characteristics of water. The first characteristic is the continuous nature of the hydrologic cycle. The use or pollution of water resources upstream will reduce their amount or limit their reuse. The second characteristic is the essential role water has for all living beings. Water is essential for life, including human health and food production and

[6] Ibid.

biodiversity in general. Water is crucial to most economic development and industrial activities. Development, in turn, has ongoing impacts on water resources.

7. *Protection of the headwaters of rivers, of wetlands and of groundwater must be facilitated.* The various efforts to accomplish this objective need to be examined, improved and replicated. Some examples include:

(a) Protection of catchment areas for urban drinking water sources, and hydropower dams;

(b) Management of watersheds with an objective of minimizing sediment load;

(c) Regulation or incentives for the protection of wetlands and use of riparian buffers;

(d) Monitoring of groundwater quality;

(e) Requirements for minimum stream flows to maintain environmental functions.

8. *Pollution caused by human activities must be minimized.* The impacts of pollution on subsequent human use, health, groundwater and biological diversity should not be underestimated. All human activities generate pollution; the following are among the most important sources of pollution:

(a) Industry: clean production schemes to reduce industrial pollution have proved effective in many countries where there are economic incentives to reduce water use and pollution;

(b) Agricultural chemicals: the impacts of agricultural chemicals may be reduced by limiting the availability of the most harmful chemicals and by improving training in the proper use and handling of these chemicals and research and training on topics such as integrated pest and nutrient management, biological pest control and organic agriculture;

(c) Sanitation: untreated waste can be reduced by requiring installation of sanitation services, whenever drinking water is provided. Basic training in sanitation and health is also necessary;

(d) Agricultural sedimentation: agricultural sedimentation can be reduced by providing education and incentives for soil and water conservation and encouraging or requiring riparian buffers;

(e) Landfills and hospital wastes: pollution from landfills and hospital waste can be reduced by encouraging recycling where appropriate and separating toxic wastes. Location, design and management of disposal sites are essential in reducing pollution;

(f) Monitoring of water quality and quantity, including the effects impacts of various water uses is crucial. The resulting information needs to be available to the various branches of government and to civil society. Environmental impact assessments needs to be considered for all new activities. The resulting environmental action plans need to be monitored and their implementation enforced. Local communities must be encouraged to participate in the decision-making processes and in monitoring of water quality and quantity.

II. Institutional arrangements

9. Institutional arrangements, including policy regulations, legislation incentives and agreements, need to be put into place to: prioritize allocation; regulate pollution loads and water quality; ensure a participatory process; define a role for communities in the management of their natural resources; and encourage the establishment of basin-level cooperation and dispute settlement mechanisms.

10 *Participation* by all stakeholders (for example, communities, non-governmental organizations, the private sector and academics), including those not currently provided water services, in water resource decision-making and, where appropriate, in water resources management, should be encouraged. Policies and processes need to be established to encourage participation. Basin-level arrangements should be encouraged to facilitate consultation and cooperation between upstream and downstream land and water users, among various sectors, and between water use and aquatic ecosystems.

11. A much greater effort needs to be made to increase awareness among members of the public of the interdependency between land and water decisions and various aspects of their lives. Efforts should be focused on policy makers and opinion leaders but must also extend to the general public and be incorporated in primary educational programmes. The importance of the protection of the upstream water catchment, and of groundwater and groundwater recharge is essential to integrating land and water use decisions. The linkages between land and water use decisions and the impacts on human health and the survival of biodiversity more generally also need to be highlighted.

12. *Coordination* and consultation among Governments and departments, and among governmental authorities at various levels and representing different geographical locations, need to be facilitated. Mechanisms to achieve this might include establishing coordinating committees or establishing the approval processes for oversight by water or environment ministries in decisions effecting water allocation or quality. National coordinating committees should include ministries with water and land management authority and also those ministries responsible for health, finance, planning and development. The roles of subnational Governments and communities should also be defined, and management parameters and performance indicators established.

13. Special consideration needs to be given to institutional arrangements to prepare for and respond to natural disasters, for example, floods, droughts and so forth. Cooperation among Governments, among government sectors at the various levels of authority and with civil society must be established in order to coordinate preparations for, reduce the impact of, and respond effectively to, natural disasters.

III. Assessment and monitoring

14. Assessment and monitoring of water resources and water uses are essential for rational decision-making. Assessments need to include meteorological, hydrologic, geologic, and groundwater data, including water quality. Averages and totals are not sufficient. Time-series data gathered throughout the year and covering years when moisture is abundant and years when moisture is scarce are also very important. Whenever possible, the community should be encouraged to participate in the gathering of data, although this should be accompanied by training, and standards

must be rigorously maintained. Data should also be returned to communities and stakeholders and should be aggregated and made available throughout the hydrographic basin.

15. Planning land and water resources development requires knowledge of available resources and of current and projected use. To be of maximum use, assessments should also include current and projected demands for water. Special efforts should be made to obtain gender-disaggregated data regarding water use and projected use.

16. To maximize water availability, the efficiency of alternative technologies and of existing distribution systems is also crucial. The efficiency of water uses and technologies should be assessed. Assessments of water use in agricultural productions and of various agricultural technologies should be undertaken in water-deficient regions. The monitoring, maintenance and repair of water distribution systems are also crucial.

IV. Capacity-building

17. Capacity-building is crucial to sustainable development of water resources and the economic, social and environmental sectors that affect water quality and quantity and those that depend upon it. Decision makers and professionals with an understanding of integrated land and water resource management are necessary in planning, development and finance ministries as well as in ministries with responsibility for land- and water-dependent sectors. These sectors include agriculture, forestry, fisheries and environment as well as transportation, energy, mining and health. Training at the subnational level and for communities is also of critical importance.

18. Consideration should also be given to training in decision support modelling and in the preparation and evaluation of environmental impact assessments, especially in assessment of aquatic biodiversity.

19. Gender balance should be considered in training opportunities.

20. Special consideration should also be given to the capacity needs in areas where professional resources in land and water management are being reduced by human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS).

Decision 2/6
Reconciliation of the incompatible interests of water use, land use and ecosystems

The Committee on Energy and Natural Resources for Development, noting the relevance of the inter-sessional issue paper on integrated water resources management — reconciling interests of water use, land use and ecosystems[9] with its message about the need for an integrated land-water-ecosystem approach in integrated water resources management in order to maximize the benefits from water resources for socio-economic development while not compromising fundamental ecological services:

[9] E/C.14/2000/3.

(a) Recommends to the Department of Economic and Social Affairs of the United Nations Secretariat that the above-mentioned inter-sessional issue paper be made available in the preparations for the event on the ten-year review of the implementation of the outcome of the United Nations Conference on Environment and Development with the amendments referred to in chapter III, paragraph 41, of the report of the Committee on its second session;[10]

(b) Also recommends that the following issues should be given due consideration by the Economic and Social Council:

(i) Linkages between land use and water resources that expand a land-use-related decision into a water-related decision. Owing to water's function as a moving solvent, it leaches pollutants originating from land use into groundwater and rivers. At the same time, vegetation and soils are instrumental in influencing both evaporation and groundwater recharge;

(ii) Close linkages between water and ecosystems, terrestrial as well as aquatic;

(iii) The role of water in relation to a number of international conventions where water plays a very key role, including the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa,[11] the Convention on Biological Diversity[12] and the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention);

(iv) The current development towards upstream-downstream hydro-solidarity in the river basin context by securing cooperation towards maximizing the joint benefits from the water resource.

Decision 2/7
River basin management

The Committee on Energy and Natural Resources for Development, recognizing the need for an integrated approach in river basin management and noting decision 41 of the Commission on Sustainable Development adopted at its sixth session[13] in which the Commission "Encouraged riparian States to cooperate on matters related to international watercourses, whether transboundary or boundary, taking into account appropriate arrangements and/or mechanisms and the interests of all riparian States concerned, relevant to effective development, management, protection and use of water resources";[14] and in which the Commission also "encouraged riparian States concerned, to establish, where appropriate, organizations at the river basin level for the implementation of water management programmes. Within its existing guidelines, the Global Environment Facility (was) invited to consider supporting such developments as part of its international water

[10] *Official Records of the Economic and Social Council, 2000, Supplement No. 12* (E/2000/32).

[11] A/49/84/Add.2, annex, appendix II.

[12] See United Nations Environment Programme, *Convention on Biological Diversity* (Environmental Law and Programme Activity Centre), June 1992.

[13] See *Official Records of the Economic and Social Council, 1998, Supplement No. 9* (E/1998/29), chap. I, sect. B.

[14] Ibid., decision 6/1, para. 10 (b).

portfolio. All these actions should be complemented by activities to support effective national water policies and strategies in the developing countries affected by desertification and drought, particularly those in Africa",[15] decides to draw the attention of the Economic and Social Council to the objectives of the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses,[16] which merits analysis in view of its relevance to land use, as well as access to water and sanitation and environmental questions.

Decision 2/8
Sustainable exploitation of mineral resources

The Committee on Energy and Natural Resources for Development, recalling the resolution relating to minerals contained in paragraph 16 of section D of annex I to Economic and Social Council resolution 1998/46 of 31 July 1998, taking note of the decision contained in section 5 (h) (paragraph 25 of decision 8/3 adopted by the Commission on Sustainable Development at its eighth session[17] on the issue of examination of the social, economic and environmental impacts of minerals extraction and metal production, and formulation of strategies for rehabilitation of land degradation by mining, aware that mining investments have shifted significantly towards developing countries where they may not have adequate regulatory frameworks for sustainable mining, and appreciating the discussions held during the side event entitled "Panel discussion on minerals, metals and rehabilitation in the context of sustainable development" held on 23 August 2000:

(a) Decides to examine, at its third session, the social, economic and environmental impacts of minerals extraction and metal production on integrated land and water management;

(b) Also decides to work towards formulation of strategies for rehabilitation of land and water degradation by mining operations.

D. Recommendations of the Committee brought to the attention of the Council

4. Concerning the key issues formulated by the Ad Hoc Open-Ended Intergovernmental Group of Experts on Energy and Sustainable Development at its first session, the Committee on Energy and Natural Resources for Development makes the following recommendations:

1. Accessibility of energy

1.1 The establishment, where applicable, of an organizational structure and of a governmental agency responsible for sustainable energy development and to promote energy accessibility within the country.

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[15] Ibid., para. 10 (c).

[16] General Assembly resolution 51/229 of 21 May 1997, annex.

[17] See *Official Records of the Economic and Social Council, 2000, Supplement No. 9* (E/2000/29); chap. I, sect. B).

1.2 Strengthening, in the interest of achieving market stability, the ongoing international dialogue between producers and consumers of energy fuels, making use of new and innovative mechanisms.

1.3 The launching of a natural gas exploration and development initiative for least developed countries for domestic consumption. The Organization of Petroleum Exporting Countries (OPEC), the Group of Eight (G-8) nations, the World Bank and the regional development banks to be invited to contribute to a revolving fund as a commitment to helping the poorest nations with their energy problems, without interference with market mechanisms. As the least greenhouse gas-emitting of the fossil fuels and a very flexible fuel for non-mobile uses, natural gas would be the best fossil fuel on which to base an international effort on energy security for poor countries.

1.4 The establishment of a network of centres of excellence for the demonstration and dissemination of sustainable energy technologies, on the initiative of the United Nations system and with the help of donor countries, to promote capacity-building. The focus of this network should be on energy and material improvement, renewables, and environmentally sound fossil fuel technologies. To accomplish this, existing national centres may be enhanced or, when needed, new centres created with the aim of achieving a regional role for each of them.

1.5 Encouragement, on national and regional levels, of the interconnection of energy grids between adjacent countries as a way to improve energy accessibility and at the same time improve the economics of operating the grid, with the help of international institutions.

1.6 Where appropriate, the installation of regional energy commissions where national energy ministers can meet regularly to work out regional cooperation and rationalization of energy production, transmission and distribution.

2. Energy efficiency

2.1 On national and regional levels, the establishment of indicative targets for energy efficiency improvements in all sectors of society, associated with cost-effective policies and measures to achieve these targets.

2.2 The establishment of (new) regulatory and market frameworks that recognize the role of energy and material efficiency improvement, both nationally and internationally.

2.3 The set-up of mechanisms to benchmark, among countries, efforts and results of energy efficiency improvement policies as well as the energy efficiency in different economic sectors. This can be used as an instrument to increase awareness and to stimulate private and public sectors to improve and rationalize energy use.

2.4 The creation or assignment, at the national level, of a body responsible for implementing energy efficiency policies. International institutions should support the staffing of those bodies on a regional basis.

2.5 As part of globalization of trade, the formulation of minimum performance standards (with International Organization for Standardization (ISO)

certification), agreed upon internationally, for widely used energy-related products ranging from automobiles to refrigerators.

2.6 Strengthening of research, development and demonstration (R, D&D) budgets in energy efficiency. This is an area of opportunity for important cost-sharing and cooperation between the public and private sectors, and between industrialized and developing countries.

2.7 Strengthening of capacity-building, including education, training and information dissemination, ranging from energy planning to technical engineering, to improve the performance of energy and materials use, on the national and international levels.

2.8 Improved understanding of technical, social and behavioural barriers that limit the market diffusion of new energy-efficient technologies, and the development of incentives to hurdle those barriers.

2.9 Important incentives for energy and materials efficiency will be provided with the establishment of energy prices that reflect real costs, internalizing such factors as environmental and social costs. However, removal of subsidies on unsustainable energy consumption patterns must be arranged carefully so that the price fluctuations do not negatively affect the poor in society.

3. Renewable energy

3.1 The development and implementation of national and regional policies and programmes to create an enabling environment for development and utilization of renewable energy sources and to speed up the use of those sources, covering all sectors of the economy. Mapping of renewable energy sources should receive priority attention in this process.

3.2 Strengthening of R, D&D, and of industrial and organizational capacities in the field of renewable energy utilization, and elimination of obstacles to importing and exporting renewable energy equipment.

3.3 Further expansion of the role of the private sector in disseminating renewable energy technologies, and the implementation of specific incentives and regulatory frameworks, such as obligations to buy or obligations to supply, to stimulate market development of renewable energy technologies.

3.4 On a regional level, exchange of experiences on the use of renewable energy sources, through thematic workshops on a regular basis, focusing on education, training, R, D&D activities, and lessons learned from implementation programmes.

3.5 Greater emphasis on South-South cooperation in the field of renewable energy utilization, and development of concrete programmes to foster such cooperation.

3.6 The use of the World Solar Programme as a vehicle to boost the development and implementation of solar energy technologies. Full implementation of the resolutions of the General Assembly on this programme, and further strengthening of the contents and the institutional setting of the programme are recommended.

4. Advanced fossil fuel technologies

4.1 Enacting governmental policies with incentives to motivate the private sector to develop and deploy technologies that will lead the fossil energy system towards a sustainable future.

4.2 The enhancement of R, D&D in the area of advanced fossil fuel technologies, leading to near-zero emissions, with specific attention to environmental aspects of so-called decarbonization technologies to reduce the emission of carbon dioxide (CO_2).

4.3 The creation of task forces on national and regional levels, in public/private partnership, to stimulate the development and use of advanced and cleaner fossil fuel technologies. Such task forces should assist decision makers and stimulate capacity-building, technology development and transfer arrangements and the provision of soft financing through, inter alia, recourse to funding mechanisms on a regional and global level (like the Global Environment Facility (GEF), the clean development mechanism (CDM) and the pilot phase for activities implemented jointly (AIJ)) under the United Nations Framework Convention on Climate Change.[18] This undertaking would engender the cooperation of Governments and manufacturing industries in a voluntary programme framework for cleaner fossil fuel technology deployment.

4.4 The creation of partnerships between industrialized countries, with ongoing R, D&D efforts in the area of advanced fossil fuel technologies with near-zero emissions, and fossil fuel-rich developing countries, to speed up the dissemination of knowledge on those technologies and to allow realistic evaluation and application of those technologies in different regions.

4.5 Encouragement of broad public participation in activities to decarbonize fossil fuels and flue gases and to sequester CO_2, to inform the public about technologies, impacts and trade-offs involved, and to allow further development and deployment of those activities in a socially acceptable manner.

5. Nuclear energy

5.1 In the field of nuclear energy research and development (R&D), special attention to be given to the development of advanced technologies that address public concerns regarding reactor safety, environmentally safe disposal of high-level nuclear waste and spent fuel, proliferation and costs. More specifically attention is needed for, inter alia, the development of "inherently safe" reactors; the potential and effects of reduction of the lifetime of very long lived waste using separation and transmutation technologies; the development of more proliferation-resistant fuel cycles; and options to reduce the capital costs of nuclear fuel cycles.

5.2 Further actions to be undertaken to strengthen nuclear safety regimes and to improve institutional management strategies. This may include, inter alia, creating strong independent regulatory agencies; establishing a strong safety culture that goes beyond regulation and technical training; improving the

[18] A/AC.237/18 (Part II)/Add.1 and Corr.1, annex I.

effectiveness of national regulatory systems; international oversight by the International Atomic Energy Agency (IAEA); expansion of the Convention on Nuclear Safety;[19] extension and enhancement of the IAEA safeguards system; and promoting the universality of the Treaty on the Non Proliferation of Nuclear Weapons.[20]

6. Rural energy

6.1 The establishment of a national policy and action plan, and of an enabling legislation and regulatory framework, for rural energy development.

6.2 The establishment of a rural energy agency (REA), or another appropriate body, that becomes the implementing vehicle for all rural energy projects and attraction thereby of funding arrangements to set up a rural energy fund (REF) from cooperating partners to complement budgetary provisions. Staff manning such an agency as REA and operating a fund such as REF have to be appropriately trained through capacity-building programmes. Developed countries can assist in such initiatives.

6.3 In order to accelerate rural energy for sustainable development, it is critical that rural development activities, such as agriculture, transport, health, education and water supply, that have energy requirements, should be integrated through a coordinated mechanism with the agency nationally tasked with addressing their energy needs.

6.4 More active involvement of rural people, particularly women, and their institutions in identifying rural energy problems, and in formulating and implementing plans to overcome them.

6.5 Incorporation of tuition and training in rural energy support services, particularly for the purpose of maintaining rural energy systems, in vocational institutions in the rural provinces and districts that provide agricultural, bricklaying, welding and other such services. National scientific industrial and research and development centres together with technology institutes are recommended to closely work with vocational institutions in the rural areas, to effect technology and skills transfer at the very basic level.

6.6 The stimulation of the private sector to fully participate in the production and maintenance of rural energy support services. In addition, encouragement of business and investment seminars and workshops on rural energy development.

6.7 Encouragement of microfinancing schemes, which have proved to be successful in many developing countries, to facilitate access to affordable modern energy technologies in the rural areas.

6.8 Further enhancement of the provision of soft loans by international lending institutions to Governments for sharing the cost of the development of rural energy infrastructures with private sector investors.

6.9 The launch of a new global initiative, by all appropriate United Nations bodies and other interested organizations, and with the support of donor countries and private industries, to bring electric power to the people in rural and isolated

[19] International Atomic Energy Agency, INFCIRC/449.

[20] United Nations, *Treaty Series*, vol. 729, No. 10485.

areas, based on successes already achieved in applying decentralized renewable energy technologies such as photovoltaic, wind, mini-hydro and biomass in rural areas. This initiative should facilitate the efforts of developing countries in rural energy development.

6.10 Organization of a special session of the Commission on Sustainable Development, or a multi-stakeholder international conference to be planned by, inter alia, the United Nations Development Programme (UNDP), on the development and implementation of rural energy services, devoted to the technical, institutional, operational and financial aspects thereof.

7. Energy and transportation

7.1 The formulation of national policy on sustainable development of the transportation sector, together with actions and institutional arrangements to implement that policy. Such a policy may address the development of the sector as a whole and include, inter alia, an integrated view on land-use and transportation planning, policies on public transportation development, policies and criteria for fuel efficiency improvement, regulation of important environmental emissions of vehicles, R, D&D programmes to support the development of new environmentally sound transportation technologies (like fuel cells) and cleaner fuels, and actions to further develop cooperation with the private sector and the general public.

7.2 A review of taxation and subsidies in the transportation sector to increase the environmental soundness of transportation systems. Subsidies should be removed in a socially acceptable manner.

7.3 A programme of actions, at the international level, targeted at several major cities in various regions of the developing world, to demonstrate and promote policies and actions to mitigate adverse impacts on human health and productivity and environmental quality resulting from transport-related activities in urban areas. This programme may be developed by international cooperation between an appropriate United Nations body, city authorities, urban planners and bilateral and multilateral sources of finance.

8. Recommendations concerning the outcomes of the ninth session of the Commission on Sustainable Development

8.1 To initiate a process that would result in a consensus on a set of common principles to support the formulation and implementation of sustainable energy policies and programmes. See the annex, entitled "Some suggestions on possible common principles", to the recommendations concerning the outcomes of the ninth session of the Commission on Sustainable Development (chap. II, sect. B.8), as considered by the Sub-group on Energy.

8.2 To formulate a programme of actions in the field of "energy and sustainable development", making use, inter alia, of the recommendations of the Committee on the key issues, as a step towards a world sustainable energy programme. This programme could be structured along the following lines:

- The formulation and implementation of sustainable energy policies and plans on national and regional levels;

- The creation of proper market conditions for a sustainable energy future;
- The promotion of R, D&D and innovation in sustainable energy development;
- Improving the performance and efficiency of energy use;
- Rural energy development (leading to a world programme on rural energy development);
- Cooperation in sustainable energy development.

8.3 To establish a mechanism to ensure effective implementation of this programme.

8.4 The outputs of the ninth session of the Commission on Sustainable Development as well as the outputs of the Committee to be integrated into the preparatory process for the ten-year review of the implementation of the outcome of the United Nations Conference on Environment and Development.

9. Other recommendations

9.1 Development of a mechanism to update the *World Energy Assessment* on a regular basis, including careful consideration of regional aspects.

9.2 Establishment of a task force on energy within the United Nations system, inter alia, to improve the coordination and cooperation on energy activities within the United Nations system, based on the experiences of the informal Ad Hoc Inter-Agency Group on Energy and the Ad Hoc Inter-Agency Task Force on Energy. This task force to be preferably mandated by the General Assembly, taking into account the coordinating role of the Economic and Social Council. The task force could play a role in implementing decisions and/or recommendations of the Commission on Sustainable Development with respect to energy. The task force could also address items deemed important by the Committee or activities to be undertaken by the Committee.